

EAGER: Biometric Authentication using Noncontact Cardiovascular Signals

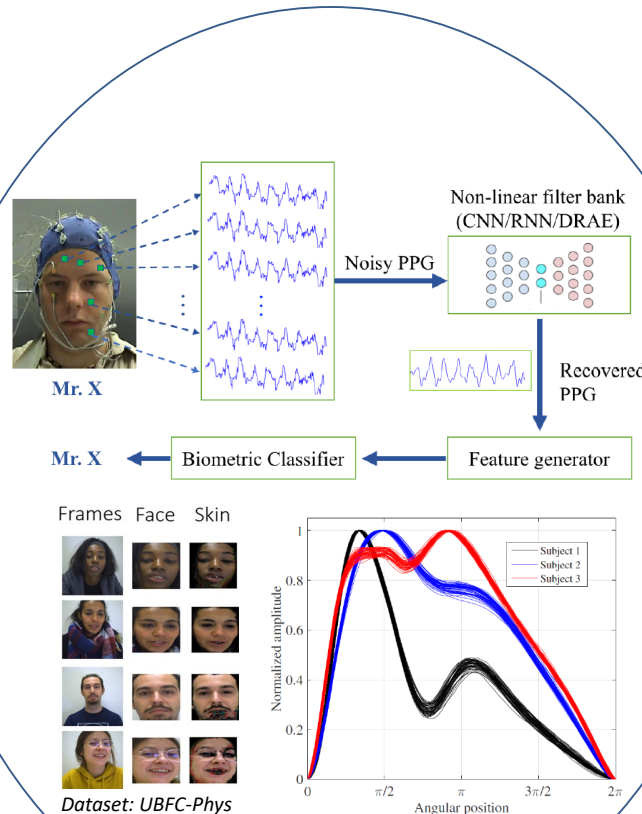


Challenge:

- To perform authentication of individuals by capturing cardiovascular information (blood volume pulses) using a video camera only

Solution:

- Detect skin regions on the face, and provide successive video frames to a deep network
- A key innovation is a new approach to signal decomposition that can distinguish different individuals



Scientific Impact:

- This project has the potential to yield a dramatically new approach to authentication that can be used to supplement others (such as face or fingerprint recognition)
- Authentication based on heart activity has important implications related to liveness detection
- The work should increase awareness of the importance of continuous authentication

Broader Impact and Broader Participation:

- A new method for continuous authentication can benefit cybersecurity and law enforcement; and potentially the approach can be used for health monitoring
- After laboratory testing, the system should be a candidate for transition to practice
- The work will be incorporated into graduate and undergraduate courses; and the prototype system has potential for use in summer programs to attract underrepresented groups
- This project benefits from our recent work in color-invariant skin detection, which addresses issues of fairness in AI

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